CLAIMS:

1.   A collimating device for controlling a radiation field of an X-ray radiated from an X-ray radiator, the device comprising:

5   a first plurality of collimating leaves;

a second plurality of collimating leaves opposing the first plurality of collimating leaves;

a beam generator configured to generate a beam which emanates between the first and second plurality

10   of collimating leaves;

a detector configured to detect the beam;

a memory configured to store position information of each leaf of the first and second plurality of collimating leaves when said each leaf is determined

15   to intersect the beam based on the detection; and

a controller configured to position said each leaf based on the position information to control the radiation field.

20   2.   The device according to claim 1, further comprising:

a reflector configured to reflect the beam generated by the beam generator so that the reflected beam emanates between the first and second plurality

25   of collimating leaves.

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3. The device according to claim 1, further comprising:

a reflector configured to reflect the beam emanated between the first and second plurality of collimating leaves so that the reflected beam is detected by the detector.

4. The device according to claim 1, wherein the memory stores the position information when the detector detects a predetermined percentage of the beam.

5. The device according to claim 1, further comprising:

a compensation unit configured to compensate the position information, wherein the controller positions said each leaf based on the compensated position information.

6. The device according to claim 5, wherein the compensation unit compensates the position information in accordance with an incident angle of the beam between the first and second plurality of collimating leaves.

7. The device according to claim 5, wherein

the memory is further configured to store the compensated position information.

8. The device according to claim 1, further comprising:

a second memory configured to store compensation distance information for compensating the position information, wherein the compensation distance information is based on a distance caused by a gear engagement in a gear rotation when said each leaf is driven by a gear.

9. The device according to claim 8, wherein the second memory stores first distance information and second distance information as the compensation distance information;

the first distance information is used when said each leaf is driven to move by a first predetermined distance in a first direction; and

the second distance information is used when said each leaf is driven to move by a second predetermined distance in a second direction.

10. A collimating device for controlling a radiation field of an X-ray radiated from an X-ray radiator, the device comprising:

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a first plurality of collimating leaves;

a second plurality of collimating leaves opposing the first plurality of collimating leaves;

a beam generator configured to generate at least

5   first and second beams, wherein the first beam intersects the first plurality of collimating leaves and the second beam intersects the second plurality of collimating leaves;

a detector configured to detect the first and

10   second beams;

a memory configured to store first position information of each leaf of said first plurality of collimating leaves when each leaf of said first plurality of collimating leaves is determined to intersect the

15   first beam based on the detection;

said memory further configured to store second position information of each leaf of said second plurality of collimating leaves when each leaf of said second plurality of collimating leaves is determined

20   to intersect the second beam based on the detection; and

a controller configured to position said each leaf of said first plurality of collimating leaves based on the first position information and the each leaf of said

25   second plurality of collimating leaves based on the second position information so as to control the

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radiation field.

11. The device according to claim 10, wherein the beam generator generates a third beam which emanates between the first and second plurality of collimating leaves and intersects an axis of the X-ray;

the detector is further configured to detect the third beam;

the memory is further configured to store third position information of each leaf of the first and second plurality of collimating leaves when said each leaf is determined to intersect the third beam based on the detection; and

the controller is configured to position said each leaf based on the third position information in addition to the first and second position information.

12. The device according to claim 10, wherein the beam generator generates third and fourth beams which emanate between the first plurality of collimating leaves and the second plurality of collimating leaves, the third beam intersecting the first plurality of collimating leaves and the fourth beam intersecting the second plurality of collimating leaves;

the detector is further configured to detect the

third and fourth beams;

the memory is further configured to store the first position information when said each leaf of the first plurality of collimating leaves is positioned furthest from the second plurality of collimating leaves and determined to intersect the first beam with one side far from the second plurality of collimating leaves based on the detection;

said memory further configured to store the second position information when said each leaf of the second plurality of collimating leaves is positioned furthest from the first plurality of collimating leaves and determined to intersect the second beam with one side furthest from the first plurality of collimating leaves based on the detection;

said memory further configured to store third position information when said each leaf of said first plurality of collimating leaves is positioned closest to the second plurality of collimating leaves and determined to intersect the third beam with another side closest to the second plurality of collimating leaves based on the detection;

said memory further configured to store fourth position information when said each leaf of said second plurality of collimating leaves is positioned closest to the first plurality of collimating leaves and

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determined to intersect the fourth beam with another side closest to the first collimating leaves based on the detection; and

the controller is configured to position said each leaf of said first plurality of collimating leaves based on the first and third position information and the said each leaf of said second plurality of collimating leaves based on the second and fourth position information.

13. The device according to claim 10, wherein the beam generator generates a first group of beams including the first beam and a second group of beams including the second beam as the plurality of beams, the first group of beams intersecting the first plurality of collimating leaves and the second group of beams intersecting the second plurality of collimating leaves;

the detector is further configured to detect the first and second groups of beams;

the memory configured to store first information of positions of each leaf of said first plurality of collimating leaves where said each leaf of said first plurality of collimating leaves is determined to intersect the first group of beams with one side close to the second plurality of collimating leaves based on

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the detection;

said memory further configured to store second information of positions of each leaf of said second plurality of collimating leaves where said each leaf of said second plurality of collimating leaves is determined to intersect the second group of beams with one side close to the first plurality of collimating leaves based on the detection; and

a controller configured to position said each leaf of said first plurality of collimating leaves based on the first information and said each leaf of said second plurality of collimating leaves based on the second information.

14. A radiotherapy apparatus for radiating an X-ray and concentrating the X-ray towards a predetermined part of an object, the apparatus comprising:

an X-ray radiator configured to radiate the X-ray; and

a collimator configured to control a radiation field of the X-ray radiated by the X-ray radiator, including:

a first plurality of collimating leaves;

a second plurality of collimating leaves opposing the first plurality of collimating leaves;

a beam generator configured to generate a beam which emanates between the first and second plurality of collimating leaves;

a detector configured to detect the beam;

5   a memory configured to store position information of each leaf of the first and second plurality of collimating leaves when said each leaf is determined to intersect the beam based on the detection; and

a controller configured to position said each leaf

10   based on the position information.

15. The apparatus according to claim 14, further comprising:

a display configured to display information of the

15   collimator.

16. The apparatus according to claim 14, wherein the beam generator is rendered operative when said apparatus is powered.

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17. The apparatus according to claim 14, wherein the beam generator is rendered operative at predetermined intervals.

25   18. The apparatus according to claim 14, further comprising an input unit configured to input an

instruction, wherein the beam generator is rendered operative in response to the instruction.

19. A method of positioning collimating leaves for use in a collimator which controls a radiation field of an X-ray radiated from an X-ray radiator, wherein the collimating leaves include a first and second plurality of collimating leaves, said plurality of second collimating leaves opposing the first plurality of collimating leaves, the method comprising:

generating a beam which emanates between the first and second plurality of collimating leaves;

detecting the beam;

storing position information of each leaf of the first and second plurality of collimating leaves when said each leaf is determined to intersect the beam based on the detection; and

positioning said each leaf based on the position information to control the radiation field.

20. A method of positioning collimating leaves for use in a collimator which controls a radiation field of an X-ray radiated from an X-ray radiator, wherein the collimating leaves include a first and second plurality of collimating leaves, the plurality of second collimating leaves opposing the first plurality of

collimating leaves, the method comprising:

generating at least first and second beams, wherein the first beam intersects the first plurality of collimating leaves and the second beam intersects

5 the second plurality of collimating leaves;

detecting the first and second beams;

storing first position information of each leaf of said first plurality of collimating leaves when said each leaf of said first plurality of collimating leaves

10 is determined to intersect the first beam based on the detection and storing second position information when each leaf of said second plurality of collimating leaves is determined to intersect the second beam based on the detection; and

15 positioning said each leaf of said first plurality of collimating leaves based on the first position information and said each leaf of said second plurality of collimating leaves based on the second position information to control the radiation field.

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21. The device according to claim 1, wherein the beam intersects an axis of the X-ray.